AMENDMENTS TO THE CLAIMS

1. (Original) A biointerface membrane, the membrane comprising:

a first domain, wherein the first domain comprises a solid portion having a plurality of interconnected cavities formed therein, wherein the solid portion comprises silicone; and

a second domain, wherein the second domain is permeable to the passage of an analyte and is impermeable to cells or cell processes.

2. (Original) The biointerface membrane according to claim 1, wherein the first domain comprises an architecture that supports tissue ingrowth or interferes with barrier cell layer formation.

3. (Original) The biointerface membrane according to claim 1, wherein the cavities form a cavernous configuration with a depth of greater than one cavity in three dimensions substantially throughout the entirety of the first domain.

4. (Original) The biointerface membrane according to claim 1, wherein a substantial number of the cavities are from about 20 microns to about 2000 microns at least one dimension.

5. (Original) The biointerface membrane according to claim 1, wherein a substantial number of the cavities are from about 25 microns to about 1000 microns in at least one dimension.

6. (Original) The biointerface membrane according to claim 3, wherein the cavities are formed in a plurality of layers, each layer having different cavity dimensions.

7. (Original) The biointerface membrane according to claim 1, wherein the second domain comprises a biostable material.

8. (Original) The biointerface membrane according to claim 7, wherein the biostable material comprises a hydrophobic portion and a hydrophilic portion.

9. (Original) The biointerface membrane according to claim 7, wherein the biostable material comprises polyurethane.

10. (Original) The biointerface membrane according to claim 7, wherein the biostable material comprises polyurethane and a hydrophilic polymer.

11. (Original) The biointerface membrane according to claim 7, wherein the biostable material comprises polyurethane and polyvinylpyrrolidone.

12. (Original) The biointerface membrane according to claim 7, wherein the biostable material comprises silicone and a hydrophilic component.

13. (Original) The biointerface membrane according to claim 7, wherein the biostable material comprises silicone and polyethylene glycol.

14. (Original) An implantable device, the device comprising a biointerface membrane, the membrane comprising a first domain and a second domain, wherein the first domain is distal to the implantable device, wherein the first domain comprises a solid portion comprising silicone and having a plurality of interconnected cavities formed therein, wherein the second domain is proximal to the implantable device, and wherein the second domain is permeable to the passage of a chemical and is impermeable to cells or cell processes.

15. (Original) The implantable device of Claim 14, comprising an analyte sensor.

16. (Original) The implantable device of Claim 14, comprising a glucose sensor.

17. (Original) The implantable device of Claim 14, comprising a cell transplantation device.

18. (Original) The implantable device of Claim 14, comprising a drug delivery device.

19. (Original) The implantable device of Claim 18, wherein the drug delivery device is selected from the group consisting of a pump, a microcapsule, and a macrocapsule.

20. (Original) The implantable device of Claim 14, comprising an electrical signal measuring device.

21. (Original) The implantable device of Claim 14, comprising an electrical pulse delivering device.

22. (Original) A method of monitoring an analyte level, the method comprising:

providing a host;

providing an implantable analyte sensor, the sensor comprising a biointerface membrane, the membrane comprising a first domain and a second domain, wherein the first domain is distal to the implantable device, wherein the first domain comprises a solid portion comprising silicone and having a plurality of interconnected cavities formed

therein, wherein the second domain is proximal to the implantable device, and wherein the second domain is permeable to the passage of an analyte and is impermeable to cells or cell processes;

implanting the sensor in the host; and

monitoring an analyte level.

23. (Original) The method according to claim 22, wherein implanting the sensor in the host comprises implanting the sensor in a subcutaneous tissue of a host.

24. (Original) The method according to claim 22, wherein the analyte sensor is configured to permit accurate continuous analyte sensing.

25. (Original) The method according to claim 22, wherein implanting the sensor in the host comprises implanting the sensor in a subcutaneous tissue of a host.

26. (Original) An implantable device, the device comprising:

a sensing region configured to permit continuous analyte sensing *in vivo*; and

a membrane, the membrane comprising a biointerface region comprising a cavernous first portion and a non-cavernous second portion, wherein the non-cavernous second portion is resistant to cellular attachment, cells, or cell processes, and wherein the non-cavernous second portion is permeable to the passage of at least one chemical.

27. (Original) The implantable device according to claim 26, wherein the cavernous first portion comprises a solid portion and a plurality of interconnected cavities that support tissue ingrowth and interfere with barrier cell layer formation.

28. (Original) The implantable device according to claim 27, wherein the cavernous first portion comprises a depth of greater than one cavity in three dimensions substantially throughout the entirety of the cavernous first portion.

29. (Original) The implantable device according to claim 27, wherein a substantial number of the cavities are from about 20 microns to about 2000 microns in at least one dimension.

30. (Original) The implantable device according to claim 27, wherein a substantial number of the cavities are from about 25 microns to about 1000 microns in at least one dimension.

31. (Original) The implantable device according to claim 27, wherein the cavities are formed in a plurality of layers, each layer having different cavity dimensions.

32. (Original) The implantable device according to claim 26, wherein the second portion comprises a biostable material.

33. (Original) The implantable device according to claim 32, wherein the biostable material comprises a hydrophobic portion and a hydrophilic portion.

34. (Original) The implantable device according to claim 32, wherein the biostable material comprises polyurethane.

35. (Original) The implantable device according to claim 32, wherein the biostable material comprises polyurethane and a hydrophilic polymer.

36. (Original) The implantable device according to claim 32, wherein the biostable material comprises polyurethane and polyvinylpyrrolidone.

37. (Original) The implantable device according to claim 32, wherein the biostable material comprises silicone and a hydrophilic component.

38. (Currently Amended) The implantable device according to claim 32, wherein the ~~biostable material~~ first portion comprises silicone ~~and polyethylene glycol~~.

39. (Original) The implantable device according to claim 26, wherein the device comprises an implantable glucose sensor.

40. (Original) The implantable device according to claim 26, wherein the device comprises a cell transplantation device.

41. (Original) The implantable device according to claim 26, wherein the device comprises a drug delivery device.

42. (Original) The implantable device according to claim 41, wherein the drug delivery device is selected from the group consisting of a pump, a microcapsule, and a macrocapsule.

43. (Original) The implantable device according to claim 26, wherein the device comprises an electrical signal measuring device.

44. (Original) The implantable device according to claim 26, wherein the device comprises an electrical pulse delivering device.

45. (Original) An implantable glucose sensor, the sensor comprising:

a porous silicone portion; and

a non-porous skin, wherein the non-porous skin is adjacent to the porous silicone portion, and wherein the non-porous skin is permeable to glucose and is impermeable to cells or cell processes.

46. (Original) An implantable sensor, the sensor comprising:

a porous membrane comprising silicone; and

a non-porous membrane that is permeable to analytes and impermeable to cells and cell processes.

47. (Original) An implantable glucose sensor, the sensor comprising:

a fibrous domain that supports tissue ingrowth; and

a non-fibrous domain, wherein the non-fibrous domain is adjacent to the fibrous domain, and wherein the non-fibrous domain is permeable to analytes is impermeable to cells or cell processes.

48. An implantable sensor for implantation in soft tissue, the sensor comprising:

a sensing region; and

a biointerface membrane, wherein the biointerface membrane becomes ingrown with vascularized tissues upon implantation into soft tissue, and wherein the vascularized tissues facilitate transport of an analyte between the soft tissue and the sensing region.

49. (Original) An implantable glucose sensor for measuring glucose in soft tissue, wherein the sensor comprises:

a biointerface membrane, wherein host tissue integration into the biointerface membrane permits accurate sensor function.

50. (Original) A method for measuring an analyte in a soft tissue, the method comprising:

implanting an analyte sensor in a soft tissue of a host;

measuring an analyte concentration prior to tissue ingrowth;

permitting ingrowth of tissue into a portion of the sensor; and thereafter

measuring an analyte concentration.

51. (Original) A method for measuring an analyte in a soft tissue, the method comprising:

implanting an analyte sensor in a host;

functionally measuring an analyte concentration prior to tissue ingrowth; and

functionally measuring an analyte concentration after tissue ingrowth.